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Thesis title: **Market discipline and bank efficiency in the Asia-Pacific region**

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1. THESIS SUMMARY

The thesis studies the market discipline of depositors and subordinated debt holders, bank efficiency, and the impact of market discipline on bank efficiency in the Asia-Pacific region in the period 2016–2021. The thesis results have clarified some of the following issues: *Firstly,* the market participants will exercise discipline against banks with higher risk levels. These are the risks that Basel includes in its recommendations requiring banks to fully disclose information (credit risk, market risk, operational risk, and counterparty credit risk). Therefore, this is one of the reasons why banks delay meeting information disclosure regulations for these four types of risks, especially in the group of emerging economies. *Secondly,* the increased ability of banks to meet capital and liquidity regulations under the Basel III framework of both developed and emerging economies helps market participants increase their confidence and reduce disciplinary actions against those banks. *Finally,* strengthening market discipline or increasing the supervision and discipline of market participants regarding excessive risk-taking by banks puts pressure on less efficient banks and can thereby help improve the efficiency of the banking system. Regarding formal banking regulations, the group of developed economies needs to focus on meeting short-term liquidity standards to increase banks' technical efficiency scores. Meanwhile, for the group of emerging economies, the ability to meet capital and liquidity regulations under Basel III has not shown a clear impact. From there, the thesis proposes policy implications to improve operational efficiency from the perspective of the market discipline of participating members. Specifically: (i) improve efficiency through adjusting the bank's input factors; (ii) improve efficiency through increased market discipline among market participants; and (iii) improve

efficiency through increased ability to meet capital and liquidity regulations under Basel, especially liquidity coverage ratio (LCR) regulations.

2. CONTRIBUTIONS OF THE THESIS

2.1. Theoretical contributions

Firstly, the thesis focused on analyzing and classifying the types of risks that banks face, including credit risk, market risk, operational risk, and counterparty credit risk. These risks are mentioned in the third pillar of the Basel framework, and the Bank for International Settlements has issued guidelines and disclosure requirements for them. Compared to previous studies (such as Afzal et al., 2021; Barajas & Roberto, 2000; Demirgüç-Kunt & Huizinga, 2004; Hadad et al., 2011; Ioannidou & Dreu, 2011; Soledad et al., 2001; Yeyati et al., 2004), which considered risk measures (mainly using the CAMEL model—capital adequacy, asset quality, management, earnings, and liquidity) and bank fundamentals (such as bad debt, ROE, and bank size), earlier risk assessments primarily focused on credit and liquidity risks while neglecting market and operational risks. Therefore, this thesis emphasized assessing the risk profile based on Basel standards, highlighting the four key risk types that Basel recommends for increased disclosure: credit risk, counterparty credit risk, market risk, and operational risk. A clear understanding of these risks is necessary to evaluate their impact on market discipline (i.e., the discipline imposed by depositors and subordinated debt holders). Additionally, the thesis demonstrated that these risks can lead to a loss of trust from stakeholders, including depositors and subordinated debt holders. Future research could focus on assessing how this loss of trust affects the behavior and investment decisions of stakeholders.

Secondly, the Basel III capital rules are intended to ensure stronger banking performance, but in less developed markets in the Asia-Pacific region, meeting these requirements poses significant challenges. The study's results indicate that market participants' confidence increases when banks comply with Basel III capital and liquidity regulations. This is particularly important in encouraging banks in emerging economies, which are in the process of implementing Basel II and beginning to adopt Basel III regulations.However, the thesis also highlights that excessively increasing capital ratios and liquid assets can lead to negative reactions from market participants. Specifically, the research shows that banks raising capital too much tend to strengthen depositors' market discipline, while banks with excessive liquid assets face increased market discipline from subordinated debt holders. These findings further support the financial leverage theory of (Modigliani & Miller, 1963) and the risk transfer model theory of (Bryant, 1980 and Diamond & Dybvig, 1983) within the context of market discipline.

Thirdly, the thesis provides further theoretical evidence on the impact of market discipline (from depositors and subordinated creditors) on bank efficiency, particularly for banks in the Asia-Pacific region. Compared to previous studies, the effect of market discipline on bank efficiency remains controversial. For instance, (Barth et al., 2004 and Levine, 2005) presented evidence that only market discipline influences bank performance, while other studies, such as (Allen et al., 2014; Belkhir, 2010; Chortareas et al., 2013; Manlagnit, 2015 and Morgan & Stiroh, 1999), found that market discipline does not play a significant role in explaining bank efficiency. Additionally, (Pasiouras et al., 2009) highlighted the dual roles of bank supervision and regulation in affecting bank efficiency. Given these contradictory findings, the thesis demonstrates that increased disciplinary behavior from depositors encourages banks to operate more cautiously and focus on technology, thereby improving their efficiency. In contrast, while subordinated debt holders have a positive impact on both pure technical efficiency and scale efficiency, they do not show a clear significance in affecting the overall technical efficiency (TE) of banks. This result further supports traditional supply and demand theory. For an inefficient bank, depositor and subordinated debt holders behavior will shift, moving the money supply curve to the left, either by demanding higher deposit interest rates or by withdrawing deposits. Consequently, when banks receive disciplinary signals from market participants, they are driven to operate more efficiently, or they risk being eliminated from the system.

2.2. Practical contributions

The research findings of the thesis clarify several key issues: *First,* market participants tend to discipline banks with higher risk levels, particularly those risks identified by Basel as requiring full disclosure (credit risk, market risk, operational risk, and counterparty credit risk). This finding highlights one reason why banks, especially in emerging economies, delay complying with disclosure regulations for these four types of risks. While previous studies have shown that market discipline is sensitive to banking risks, they have not addressed why banks delay meeting Basel III disclosure requirements. *Second,* increased compliance with Basel III capital and liquidity requirements in both developed and emerging economies boosts market participants' confidence and reduces disciplinary actions against banks. Specifically, when banks comply with Basel III regulations, market participants' scrutiny regarding risk profiles, certain bank characteristics, and macroeconomic indicators tends to decrease. This indicates that compliance with Basel III capital and liquidity requirements increases market participants' confidence, which is especially important for encouraging banks in emerging economies that are still in the Basel II implementation phase or in the early stages of adopting Basel III regulations. This finding aligns with previous studies, such as Le (2020), but the thesis provides deeper insights by demonstrating that meeting the minimum capital requirement under Basel III increases confidence in banks in emerging economies, while for developed economies, the liquidity coverage ratio (LCR) plays a more important role than other ratios. *Third,* the estimates of bank efficiency in the Asia-Pacific region show that average technical efficiency, pure technical efficiency, and scale efficiency are relatively low. This significant disparity among banks in the study sample, even though the banks selected have large Tier 1 capital, is primarily driven by differences among banks in emerging economies. The variation is more attributable to differences in pure technical efficiency than in scale efficiency. This result reflects common characteristics of banks in the Asia-Pacific region. *Fourth,* both developed and emerging economies show a positive relationship between market discipline and bank efficiency. Strengthening market discipline behaviors from market participants (depositors, subordinated debt holders) helps banks improve their efficiency in terms of technical efficiency, pure technical efficiency, and scale efficiency. However, there are differences in the impact of market discipline on bank efficiency between banks in developed and emerging economies. In developed economies, the market discipline imposed by both depositors and subordinated creditors plays a clear role in improving bank efficiency. However, in emerging economies, the market discipline of subordinated creditors has not shown a clear impact on overall bank efficiency, though it does contribute to increases in pure technical efficiency (PTE) and scale efficiency without significantly impacting technical efficiency. This is one of the new findings of the study, offering broader insights compared to previous research, which often approached the issue from a narrower perspective.

The thesis demonstrates that achieving technical efficiency, pure technical efficiency, and scale efficiency requires enhancing market discipline among participants (including depositors and subordinated creditors). As a result, the thesis offers several policy implications aimed at strengthening market discipline and creating an environment where it can operate effectively. *First,* there is a need to continue improving institutional frameworks and policies to enhance banks' information disclosure capabilities. This includes stricter enforcement of international financial reporting standards to foster an environment where market discipline can function effectively. Additionally, policies must be introduced to manage different types of risks. Compared to previous studies, the thesis highlights one of the reasons banks—particularly in emerging economies—delay meeting disclosure requirements for the four major types of risks (credit risk, market risk, operational risk, and counterparty credit risks). This finding aligns with signaling theory, which suggests that banks signal information to stakeholders but tend to use tools that present the most favorable information to investors. Therefore, it is critical to increase transparency in managing these risks, especially for banks in emerging economies. Second, the development of standards and regulations for assessing banking system efficiency is essential. While many studies have measured bank efficiency, there is currently no standardized system for evaluating the performance of banks across different systems. This makes it difficult for market participants to compare and assess banks' performance, limiting their ability to impose effective disciplinary actions. *Third,* it is important to continue implementing capital and banking regulations according to the Basel framework, adapted to the specific stages of each economy and the characteristics of each bank. Although this recommendation has been noted in previous studies, the thesis emphasizes the complementary role of formal banking regulations and market discipline in improving bank efficiency. This is especially relevant for emerging economies, where compliance with capital and liquidity regulations alone does not always lead to increased efficiency. In these cases, market discipline mechanisms must be valued and promoted. *Final,* policies need to be refined to protect the rights and obligations of market participants, including depositors and subordinated creditors. Strengthening these protections will enhance the role of market discipline in monitoring and issuing warning signals for risky activities within the banking system.

3. APPLICATIONS / APPLICABILITY IN PRACTICE AND DIRECTIONS FOR FUTURE STUDIES

Firstly, due to data limitations, the study only examined a sample of approximately 300 banks with large Tier 1 capital, based on The Banker database's rankings. Additionally, it selected only two measures to represent the discipline of market participants (subordinated creditors, and depositors).

Secondly, while the study collected sufficient data on two capital regulations under Basel III—minimum capital adequacy ratio (CAR $\geq$ 10.5%) and the risk-free leverage ratio (LEV $\geq$ 3%)—it encountered issues when including the LEV ratio in the model. The LEV ratio led to model interference, likely because all banks in the sample met this criterion, prompting the study to exclude this variable from the research model.

Thirdly, the study did not build an individual information disclosure index for each bank to assess its impact on market discipline but instead used the information disclosure index for each economy in the research model. The focus of the study was to examine the effects of various factors on market discipline and to select banks with sufficient data for the analysis.

Finally, the study only considers the market discipline imposed by depositors and subordinated creditors. It did not examine the discipline of equity owners due to the differing characteristics and policies of stock markets across countries. This represents a limitation of the research. Additionally, because of data availability constraints, the study was unable to separate the interest costs that banks pay on uninsured deposits. As a result, the study used implicit interest rates to represent the disciplined behavior of depositors.

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